

## **Appendix A**

### **Conservation and Natural Resource Restoration Projects to be Funded by the White River Restoration Funds**

## **I. Introduction**

The following is a list of proposed conservation and natural resource restoration projects the Indiana Natural Resource Trustees developed in connection with significant input from the Indiana Department of Environmental Management's Office of Land Quality and several branches of the Indiana Department of Natural Resources (IDNR), including the Division of Fish and Wildlife, the Division of Land Acquisition, the Division of Nature Preserves, and the Division of Soil Conservation. The projects are based in part upon projects identified by several local government authorities, including the Soil and Water Conservation Districts of Madison County and Hamilton County, Hamilton County Parks, Noblesville Parks, and Indy Parks. The projects identified in this Appendix are examples of the types of conservation and natural resource restoration projects that could be developed and paid for, in part or in total, with money from the White River Restoration Funds. These projects are intended to compensate the State of Indiana and its citizens, through the Natural Resource Trustees, for damages resulting to the stretch of the West Fork of the White River from Anderson past downtown Indianapolis affected by the December 1999 fish kill.

These projects are in addition to, and do not include, the fish restocking efforts that will also be conducted as needed based upon DNR's future sampling and monitoring efforts related to the redevelopment of the fish community in the affected stretch of White River.

To date, DNR has stocked 540,598 fish in the White River. In the Spring of 2000, DNR biologists stocked 63,000 channel catfish fingerlings and 1,937 adult game fish, which included channel catfish, flathead catfish, largemouth bass, smallmouth bass, crappie, bluegill, and redear. In the Fall of 2000, DNR biologists stocked 475,661 fish in the White River, which included channel catfish, flathead catfish, largemouth bass, smallmouth bass, rock bass, bluegill, and white crappie. The restocked fish were placed in the river in habitats consistent with the preferences of the various species. Additionally, wild fish have begun to move into the affected area.

Continued detailed studies of the river ecosystem by DNR will help define the long-term stocking and other fish management needs. Currently, DNR is planning to conduct monitoring and/or sampling of the fish community to measure fish distribution, abundance, and species mix at a minimum of 17 locations along the affected stretch of the White River in the years 2001, 2002, 2003, and 2004. Additionally, DNR is planning to conduct angler surveys between April and October in the years 2002 and 2004 to measure the species and sizes of fish caught and harvested or released as well recreational boating use.

The conservation and natural resource restoration projects have three major components. First, restoration projects were identified based upon the need to improve and restore the fish habitat in this stretch of the White River. The goal was to return the fish habitat to baseline, which was the condition of this stretch of the White River prior to the

fish kill, in order to promote and foster the development of the fish community. Currently, the fish community is being replenished by restocking efforts, the growth of offspring from restocked fish, and the natural migration of fish from tributaries and other parts of the White River.

Second, the conservation and natural resource restoration projects were identified based upon the need to enhance and protect properties with valuable natural resources through property acquisition or protective easement. Protection of these properties will ensure the preservation of their ecological significance to the White River watershed and the ability of the citizens of Indiana to enjoy these areas in the future.

Third, restoration projects were identified based upon the need to enhance and preserve certain property adjacent to the White River, which will foster and promote a better fishing habitat and cause less erosion and pollution runoff into the White River. These projects are intended to rehabilitate the White River, thereby enhancing its quality and value for conservation and recreational purposes, and will also allow the citizens of Indiana enhanced access to the White River where they can fish, boat, or simply enjoy its natural beauty.

## **II. Projects Intended to Improve and Restore the Fish Habitat**

### **A. Acquisition of Natural Areas**

Previously, the White River ran through a natural landscape of upland and bottomland hardwood forests, interspersed with occasional wetland marshes and seeps. Most of the forests have long since been cleared for agricultural uses, and cities and towns have been established at intervals along the river's length. The elimination of most of these

hardwood forests has led to an increased amount of silt entering the White River with resulting degradation of the river's water quality, an increased amount of flooding, and an increased water velocity in the river during times of flooding. Along with increased water velocity comes increased stream cutting, which results in increased erosion. Accordingly, the habitat for a number of bird, reptile, amphibian, and mammal species has been radically reduced.

However, some natural areas, which are small patches of bottomland hardwood forests, sometimes associated with upland forests and steep river bluffs, remain in Madison, Hamilton, and Marion counties. These natural areas are blocks of land that contribute significantly to the ecological qualities of the White River. In many cases, the natural areas include upland areas necessary to the life cycle of vertebrates and invertebrates that need and use the river. These natural areas function as reservoirs of biological diversity, and as recharge areas for flora and fauna that help repopulate the more disturbed parts of the riverine environment. Additionally, natural areas sometimes function as hydrological recharge areas because they hold and filter water, releasing water over time. These areas also serve as a seed source for native tree species, including oaks and hickories. These trees buffer the White River, stabilizing the riverbank and providing a shaded environment, which is very important to the river's fishery as many fish species choose to locate in shaded areas during hot summer months. Without these areas, much of the river's remaining biological diversity would be lost. More important, some of these natural areas are at critical locations; such as at junctures of major tributaries to the White River and some have a significant frontage along the White River. Acquisition of some of these

critical natural areas in Madison, Hamilton, and Marion counties will help guarantee a successful river restoration and help guarantee its subsequent stability.

Several tracts of land near the White River are natural areas in a somewhat degraded condition. Some of these tracts of land are owned by local parks systems. These areas could be restored by eliminating the nonnative species, for example Amur Honeysuckles, which occupy the space needed by the species that were originally present, such as oaks and hickories, and then restoring the native bottomland hardwood tree species and native wildflowers.

## **B. Riverbank Buffer Strips**

The Trustees propose that one of the restoration projects could be to acquire, from willing participants, and establish conservation buffer strips, also known as filter strips, along affected areas of the White River in Madison and Hamilton Counties. A conservation buffer strip is an area of land or strip of land adjacent to the river, which will remain privately owned, but placed in a conservation easement as provided under Indiana Code Section 32-5-2.6-1. The purpose of the buffer strips will be to intercept and trap sediment, organics, fertilizers, pesticides, and other pollutants before they are carried into the river by rain runoff or other causes. These buffer strips will enhance wildlife habitat, rehabilitate the White River, improve water quality, and enrich the aesthetics near the White River.

In particular, the Trustees envision that the buffer strips would be 60 to 100 feet wide and could be established along the bank of the White River in the affected areas and along major tributaries to the White River in Madison and Hamilton Counties. Buffers may either be established as woody vegetation, grass cover, or a combination of both. The

establishment of buffers will benefit the White River's recovery and stability in the future.

The Trustees specifically envision the planting of riparian forest buffer, which is riverside vegetation consisting of trees, shrubs, and grasses that can intercept pollutants from both surface and subsurface water before they reach the White River. Additional consideration may be given to various riverbank protection measures for site-specific use, such as \_soft\_ armoring with vegetation through bio-engineered stabilization measures. Buffers are most effective when they are used in combination with other conservation measures as part of a planned conservation system.

The Trustees believe that it is important to establish buffer strips along the White River and its tributaries in order to reduce the amount of sediment entering into the White River. When sediment enters the White River, the sediment can be a medium that carries other pollutants such as nutrients, pesticides, fertilizers, *E. coli*, and metals into the river. The sediment can also cover otherwise valuable gravel streambeds. Many fish and aquatic insects rely on gravel streambeds for habitat, including hiding places and spawning sites.

Similarly, sediment often carries with it nutrients that in turn degrade water quality. For example, algae can result from too many nutrients entering into the river. Algae, like land dwelling plants, are productive when nutrients such as phosphorus and nitrogen are readily available. A sudden growth of algae can result from large inputs of nutrients, and the algae will eventually die and settle to the bottom of the riverbed where it will be decomposed by other organisms that use up oxygen in the process. This depletion of oxygen in the river can be an indirect result of increased nutrients in the river. Such oxygen depletion can have a dramatic effect on all river organisms. For example, low

oxygen levels can result in a lower quality fish, mussel, and insect community, as well as large-scale mortality when the input of sediment carrying nutrients is severe. Such a surge of nutrients is common after storm events, especially when runoff travels across disturbed landscapes. Buffer strips can reduce and slow the surge of nutrients and other pollutants before they get into the river. Vegetated buffer strips aid in trapping the soil on land and allows terrestrial plants to take up the nutrients before they are carried to the river. There are many sources of nutrients including fertilizers, animal and human wastes, and lawn clippings.

Establishing buffer strips along the White River and its tributaries would offer habitat enhancement for fish and other wildlife. Specifically, buffer strips offer increased cover for wildlife, additional shade over the river and its tributaries resulting in lower water temperatures, and additional vegetation food sources for wildlife. As an example, during hot summer months, certain species of fish such as smallmouth bass and bluegill move to cool shaded areas of the river in order to avoid heated environments.

Buffer strips would also minimize soil erosion into the river improving water quality and enabling quicker restoration of the river's aquatic diversity and fishery. In addition, several spots of severe riverbank erosion could be stabilized and vegetated. These corrective projects would eliminate chronic sources of soil erosion and riverbank instability.

### **C. Town Run South Restoration**

Proposed restoration for this site could include the removal of invasive exotic plant species, such as the shrub Amur Honeysuckle. Currently, Amur Honeysuckle is inundating the 20-acre riparian wooded tract of Town Run South. Such invasive exotic species

aggressively take over a forested area and inhibit the regeneration of native species. In particular, these species will leaf-out sooner than many native species, and out-compete native species for sunlight. These invasive plant species are detrimental to the health of a forest and river corridor because they interfere with natural succession. Over time, with natural succession and inhibited regeneration of native tree species, these invasive species will prevent the regeneration of replacement trees. Therefore, the removal of invasive exotic plant species is a necessary restoration procedure to improve and preserve the current level of natural biotic diversity.

The second potential restorative measure would be to plant a 20-acre field with native prairie species, including mixed tallgrass prairie seeding. Restoration of this open meadow area would result in increased recreational opportunities for fishing in the Oxbow Quarry area, and would provide excellent bird watching opportunities given the access to water. The dense and deep-rooted biomass of prairie seeding would help rebuild the soil and improve the capacity of the land to filter rainwater.

#### **D. Marrott Park Restoration**

Jointly managed by DNR's Division of Nature Preserves and Indy Parks, Marrott Park Woods Nature Preserve is one of four state-dedicated nature preserves in the Indy Parks system. A potential restoration project could consist of improving approximately 43 acres of riparian woods in Marrott Park Woods Natural Preserve that buffers both the White River and Williams Creek. The Trustees envision restoration efforts that would include planting native trees and removing invasive exotic plants, such as thick

infestations of Amur Honeysuckle. This restoration is critical if the area is to be a home to native flora in the future.

## **II. Projects Intended to Enhance Properties with Valuable Natural Resources Through Property Acquisition and Improvements to Existing Access Sites**

Several key projects could be undertaken to improve public opportunities for access to the White River in Madison, Hamilton, and Marion counties. In response to the lost use suffered as a result of the fish kill, these projects would be intended to improve and increase opportunities for Indiana citizens to access the White River for boating, canoeing, kayaking, fishing, wildlife viewing, photography, sightseeing, and other related river uses. In some cases, new public access sites would be created through land acquisition and development.

In other cases, existing public facilities would be upgraded or expanded to better meet public needs for recreational use of the river.

### **A. New Public Access Sites**

The only existing DNR public access site on the White River between Anderson and Indianapolis is a thirty (30) foot concrete double-wide boat-launching ramp in Forest Park in Noblesville. Constructed by the DNR, this site is maintained by the Noblesville Parks Department. Additionally, there are no developed launching facilities on public-owned lands in Madison County, and the current launching facilities in Hamilton County and Marion County are inadequate to meet public needs. Furthermore, the existing public sites are not uniformly distributed along the river, which results in heavy concentrations of recreational users in certain areas while limiting public access in other stretches of the White River. This not only makes access difficult to some parts of the river, but it also tends to

overload existing public facilities during peak use times. Private access to the river from individual property owners, privately operated campgrounds, and homeowner groups exists, but is not available to the general public.

The Trustees envision that as many as five new publicly owned access sites could be acquired and developed along the White River as part of the conservation and natural resource restoration projects funded with money from the White River Restoration Funds.

In particular, there is a need for suitable access in Madison County and Hamilton County for the launching of canoes and small boats. New access sites could consist of one to two acres of property acquired from willing sellers. The development of the sites would likely involve site grading and selective tree removal if necessary, construction of graveled parking areas, ADA<sup>1</sup> accessibility and reserved parking, entrance roads, hard-packed carry-on access points at the river, and appropriate signage. Depending on the availability of land, sites could be targeted at locations accessible by public roadways, but located along river stretches currently lacking public access. This effort would be aimed at filling in the gaps on public canoe and small boat access to the river.

Where river width and depth are suitable, there would also be an effort to meet the needs for launching trailered boats. Potential opportunities for launching trailered boats on the White River exist in southern Hamilton County and northern Marion County. Again, acquisition would come through willing sellers. These sites would be similar in size to those described for canoe launches. Differences would include a concrete launching ramp, wheelchair-accessible loading ramp, and possibly other support facilities such as public

restrooms and a courtesy dock. Depending on the location, special fencing and/or landscaping needs may also exist.

### **B. Upgrading and Expansion of Existing Public Access Facilities**

City and county-owned lands bordering the White River in Hamilton County and Marion County currently provide some pedestrian, canoe, and boat access to the White River. However, at some established parks and park-controlled lands, adequate access facilities are undeveloped or in need of upgrade or repair. Working in partnership with these local park departments, DNR proposes to address access needs at selected locations.

As an example, at Broad Ripple Park in Marion County, boat access to the large pool formed by the Broad Ripple Dam is provided by a concrete boat ramp and parking area. However, the ramp is in need of upgrading to increase accessibility, safety, and on-site erosion control. The water end of the ramp has a two to three-foot drop-off where the river current has undercut the concrete. This proposed upgrade would provide for added public safety and increased use.

The dam just downstream from the ramp at Broad Ripple Park could use improved safety signage and a cabled warning buoy system. This project would provide for added public safety and improved use.

The parking lot adjoining the boat ramp is situated on high ground beside and above the ramp. Drainage from rainwater flows off the parking lot and is cutting down through the earthen embankment to the boat ramp. This is causing severe erosion and is washing

---

<sup>1</sup>Americans with Disabilities Act of 1990, 42 U.S.C.' 12101, *et seq.*

sediment into the river. This problem would be corrected through new drainage control measures installed at this site.

The floating dock adjacent to the boat ramp is in need of replacement. Installation of a new courtesy dock would provide a proper and safe means for boaters to tie-off watercraft when entering or exiting this site.

Additionally, this steep, long ramp is not accessible to persons with physical disabilities and would be impractical to retrofit for this purpose. However, Indy Parks has identified a location at the north end of the park for a fishing platform and observation deck that would be accessible to persons with disabilities. This potential project would be designed to decrease bank erosion with plantings of native vegetation. An asphalt trail would be constructed to connect the existing ADA-accessible trail from the parking lot with this site. This project could provide persons with disabilities excellent opportunities to access and enjoy the White River.

At the Clare Dam in Hamilton County, a public canoe portage exists at the west end of the dam on property owned by Cinergy. This facility consists of a metal grated walkway around the dam and is accessible only to canoeists entering this site from the water. A fence prevents access from the adjacent public roadway. Currently, there is no available public parking and, as stated, the fence prevents this site from being accessible to canoeists that might like to launch at this location. Improvements to this portage could be made for parking, direct access, and carry-in features to significantly increase the value and use of this site for public use.

Finally, at a Hamilton County owned park near Strawtown, an access to White River could be developed that would provide boat access and increased fishing opportunities. These improvements are examples of the needs and opportunities to improve the accessibility to the White River and safety of some existing public access facilities. As described, there would also be efforts made to reduce and control erosion problems where present in conjunction with these projects.

#### **IV. Conclusion**

The Natural Resource Trustees believe that the conservation and natural resource restoration projects previously described would have a direct and positive impact to rehabilitate the wildlife habitat along the affected stretch of the White River, and enhance and protect properties with valuable natural resources adjacent to the White River through acquisition and protective easement. Additionally, the Trustees believe that the acquisition and establishment of conservation buffer strips previously described along the White River and its tributaries in Madison County and Hamilton County would be one of the most significant, proactive environmental protection and preservation projects of its kind in the United States guaranteeing that this natural resource will be available for Indiana's future generations.